



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/041,720      | 01/07/2002  | Joseph J. Dlugokecki | 20646-719           | 4175             |

7590

09/08/2003

KIEUN JENNY SUNG  
GARY, CARY, WARE & FREIDENRICH  
1755 Embarcadero Road  
Palo Alto, CA 94303

EXAMINER

CHAMBLISS, ALONZO

ART UNIT

PAPER NUMBER

2827

DATE MAILED: 09/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/041,720

Applicant(s)

DLUGOKECKI ET AL.

Examiner

Alonzo Chambliss

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 07 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 January 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Information Disclosure Statement***

1. The information disclosure statement (IDS) submitted on 2/25/02 in Paper No. 2 was filed before the mailing date of the non-final rejection on 8/30/03. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

### ***Drawings***

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: 132 and 165. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-4 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Tani et al. (U.S. 6,080,602).

Art Unit: 2827

In claim 1, Tani teaches attaching a die 39 to exposed wire bond pads 34 of a lead frame 30 so that the die 39 is electrically connected to the lead frame 30. The die 39 and wire bond pads 34 are encapsulated by an encapsulant 52 and reshaping of the upper surface of the encapsulant 52 where at least a portion of the encapsulant reshaping is performed by a lapping process (i.e. process to smooth or to make a level surface (see col. 3 lines 28-37 and col. 4 lines 11-27; Figs. 2A, 2B, and 3A-3D).

With respect to Claims 2 and 3, Tani teaches wherein lapping is performed by ablative lapping process (i.e. a process to remove by cutting) and mechanical using a dicing blade (see col. 4 lines 11-27; Fig. 3D).

With respect to Claim 4, Tani teaches wherein encapsulating the die 39 and the wire bond pads 34 results in the encapsulant 52 having a convex or concave an upper surface, and reshaping the encapsulant 52 results in the encapsulant 52 having a planar an upper surface (see col. 4 lines 11-27; Fig. 3D).

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tani et al. (U.S. 6,080,602) as applied to claim 1 above, and further in view of Iketani (U.S. 6,528,330).

With respect to Claim 5 and 6, Tani fail to disclose labeling by printing a mark on the reshaped flat upper surface of the encapsulant. However, Iketani discloses labeling by printing a mark on the reshaped flat upper surface of the encapsulant to stimulate a production transfer molded encapsulated IC package (see col. 1 lines 13-20 and col. 10 lines 14-21). Tani and Iketani both have substantially the same environment of utilizing a lapping process to reduce the thickness of an encapsulant material on a semiconductor device. Therefore, it would have been obvious to incorporate a mark on the reshape encapsulant of Tani, since the mark would show the polarity of the external electrodes on the surface of the encapsulant as taught by Iketani.

7. Claims 7-11, 13-17, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tani et al. (U.S. 6,080,602) as applied to claim 1 above, and further in view of Dlugokecki et al. (5,406,117).

With respect to Claim 7-11,13-17, and 21, Tani fails to explicitly disclose wherein lapping is performed using a laser or another source of electromagnetic radiation,

planar abrasive surface (i.e. mechanical grinding) attached to a belt sufficiently large to permit more than one package to be lapped at the same time, chemical etching, and plasma etching which includes chemicals as an etchant. However, Dlugokecki discloses wherein lapping is performed using a laser or another source of electromagnetic radiation, planar abrasive surface (i.e. mechanical grinding) sufficiently large to permit more than one package to be lapped at the same time such as shown by Tani, chemical etching, and plasma etching which includes chemicals as an etchant (see col. 7 lines 1-28). One skilled in the art would readily recognize combining any two of the lapping process taught by Dlugokecki, since all of lapping process would by themselves or in combination with another lapping process remove an encapsulant material from a semiconductor device. It is inherent that a mechanical grinding is attached to a belt. Tani and Dlugokecki both have substantially the same environment of utilizing a lapping process to reduce the thickness of an encapsulant material on a semiconductor device. Therefore, it would have been obvious to one skilled in the art at the time of the invention to incorporate the lapping processes of Dlugokecki into the process of Tani, since the lapping processes would facilitate of the reduction in the thickness of a encapsulant material on a semiconductor device as taught by Dlugokecki.

8. Claims 12, 18-20, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tani et al. (U.S. 6,080,602) as applied to claim 1 above, and further in view of Wensink (4,384,917).

With respect to Claims 12, 18-20, and 22, Tani does not explicitly discloses wherein lapping is performed using a gas that has an ultra-fine particulate using a high

Art Unit: 2827

pressure and a pulsating liquid jet containing a particulate material under high pressure. However, Wensink discloses wherein lapping is performed using a gas that has an ultra-fine particulate using a high pressure and a pulsating liquid jet containing a particulate material under high pressure (see col. 2 lines 42-51). Tani and Wensink both have substantially the same environment of utilizing a lapping process to reduce the thickness of an encapsulant material on a semiconductor device. Therefore, it would have been obvious to one skilled in the art at the time of the invention to incorporate the jet lapping process into the process of Tani, since the jet would facilitate rapid and safe of the reduction in the thickness of an encapsulant material on a semiconductor device as taught by Wensink.

The prior art made of record and not relied upon is cited primarily to show the process of the instant invention.

### ***Conclusion***

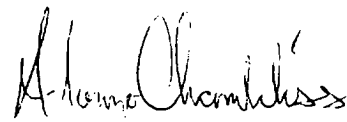
9. Any inquiry concerning the communication or earlier communications from the examiner should be directed to Alonzo Chambliss whose telephone number is (703) 306-9143. The fax phone number for this Group is (703) 308-7722 or 7724.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-7956

Application/Control Number: 10/041,720  
Art Unit: 2827

Page 7

**AC**/August 30, 2003

A handwritten signature in black ink, appearing to read "Alonzo Chambliss". The signature is fluid and cursive, with the first name "Alonzo" and last name "Chambliss" clearly distinguishable.

Alonzo Chambliss  
Patent Examiner  
Art Unit 2827